

ES&H manual

Environment, Safety, and Health

Volume II

Part 22: Emergencies, Earthquakes, Fire

22.2 Environmental Emergency Response

(Formerly ECM C3)

Recommended for approval by the ES&H Working Group

Approved by: Robert W. Kuckuck
Deputy Director for Operations

New document or new requirements

Approval date: November 15, 1994
Editorial update: April 1, 2001

DISCLAIMER

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor the University of California nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the University of California, and shall not be used for advertising or product endorsement purposes.

This work performed under the auspices of the U.S. Department of Energy by University of California Lawrence Livermore National Laboratory under Contract W-7405-ENG-48.

22.2

Environmental Emergency Response***Contents**

1.0	Introduction	1
2.0	Environmental Emergency Planning	1
2.1	Regulatory Summary.....	1
2.2	Applicability to LLNL Activities	1
2.3	Process for Compliance	5
2.4	Information and Reporting Requirements	5
2.5	Training	6
2.6	Work Standards.....	6
2.6.1	Work Smart Standards	6
2.6.2	Other Sources.....	6
2.7	Resources for More Information.....	7
2.7.1	LLNL Contacts.....	7
3.0	Environmental Emergency Response	7
3.1	Regulatory Summary.....	7
3.2	Applicability to LLNL Activities	8
3.3	Process for Compliance	9
3.4	Training	10
3.5	Work Standards.....	11
3.5.1	Work Smart Standards	11
3.5.2	Other Sources.....	12
3.6	Resources for More Information.....	12
3.6.1	LLNL Contacts.....	12
3.6.2	LLNL Environmental Emergency Response Personnel	12

Tables

Table 1.	Environmental emergency planning regulatory summary and applicable Work Smart Standards.	2
Table 2.	Environmental emergency response regulatory summary and applicable Work Smart Standards.	8
Table 3.	Small incident.	9
Table 4.	Large incident.	9

* Minor revision

22.2

Environmental Emergency Response

1.0 Introduction

Proper planning and preparation followed by appropriate and timely response to emergencies are the most effective way to minimize adverse impacts to public health and the environment. The requirements and procedures for environmental emergency planning, preparedness, response, and reporting for operations at LLNL are presented in the following sections: "Environmental Emergency Planning" (2.0) and "Environmental Emergency Response" (3.0). Additionally, see Document 35.1, "Product Storage/Hazardous Materials," in the *Environment, Safety, and Health (ES&H) Manual*. This document is in Volume II of the *ES&H Manual*, which deals with emergencies, earthquakes, and fire. Each document in Part 22 of Volume II addresses a different aspect of emergencies.

2.0 Environmental Emergency Planning

The purpose of many environmental laws and regulations is to protect public health and the environment from damage caused by accidental discharges, spills, leaks, and other releases of hazardous substances. These laws delegate control over planning activities to state and local agencies. Their overall objective is to limit potential damage to the greatest extent possible through advanced planning and appropriate environmental emergency response.

2.1 Regulatory Summary

There are many federal and state laws and regulations and DOE orders that govern planning, preparedness (including training), and response to emergencies and environmental incidents. A brief overview of each law, regulation, and DOE order is presented in Table 1.

2.2 Applicability to LLNL Activities

LLNL is subject to the regulatory requirements summarized in Table 1. To aid in compliance, the ChemTrack system utilizes bar codes and scanners to track and report hazardous material inventories throughout the Laboratory. Hazardous material storage locations are updated once a year through a wall-to-wall inventory, and this information is used to conduct preliminary hazard assessments of LLNL facilities, plan

Table 1. Environmental emergency planning regulatory summary and applicable Work Smart Standards.

Requirement	Description	WSS (see 3.1.6 for detail)
Clean Water Act (CWA)	This act requires on-shore installations with petroleum storage facilities exceeding certain thresholds for oil and/or hazardous substances to prepare and train personnel according to Spill Prevention Control and Countermeasure (SPCC) Plans. The CWA gave the State of California authority in 1987. The Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) has provisions similar to the California Porter-Cologne Water Quality Act.	40 CFR 141.11–141.16 CERCLA section 103E, 103F
State Clean Air Act	This act requires the state to adopt a plan that provides for attainment and maintenance of National Ambient Air Quality Standards.	40 CFR 761.30 CERCLA section 103E, 103F
Clean Air Act (CAA)	The CAA requires EPA to adopt emission standards for new vehicles, all aircraft, sources of hazardous air pollutants, and non-stationary sources that endanger public health and welfare. Under Title III of the CAA, covered facilities are required to implement chemical process safety management plans to prevent accidental releases of hazardous air pollutants.	40 CFR 761.30 CERCLA section 103E, 103F
California Aboveground Petroleum Storage Act	This act establishes the requirement for a program to inspect aboveground storage tanks (ASTs) and requires petroleum storage facilities to file a Storage Statement, pay fees to the state, write a spill prevention, control, and countermeasure plan, and ensure compliance with reporting requirements.	40 CFR 112
California Porter-Cologne Water Quality Act	This act specifies permitting and monitoring requirements for discharge of wastewater to minimize contamination to the environment, and regulates the wastes released into both surface and ground waters for the state.	40 CFR 141.11–141.16
Resource Conservation and Recovery Act (RCRA) and the State Hazardous Waste Control Law (HWCL)	RCRA and HWCL regulate the storage and management of hazardous wastes and include operation and reporting requirements for underground storage tanks (USTs). RCRA and HWCL require preparation of hazardous waste contingency plans and provide for specific procedures to conduct site investigation and cleanup of hazardous waste releases.	40 CFR 264.196 40 CFR 265 40 CFR 265.196 DOE O 5400.1, Chapter III, Paras. 4(b) and 4(c) 23 CCR §§ 2610–2728

Table 1. Environmental emergency planning regulatory summary and applicable Work Smart Standards. (cont'd)

Requirement	Description	WSS (see 3.1.6 for detail)
Toxic Substances Control Act (TSCA)	This federal law specifically regulates the management of chemical substances and mixtures that present an unreasonable risk of injury to health and the environment, including PCBs, and requires contingency planning for potential release incidents.	40 CFR 761.30
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	CERCLA enables federal agencies to provide a response to unpermitted releases of hazardous substances to the environment and procedures to remediate those releases. Requirements include Emergency Planning and the Community Right-to-Know Act.	CERCLA section 103E, 103F
Superfund Amendments and Reauthorization Act (SARA), Title III	The purpose of SARA Title III is to assist the community and responsible public agencies in planning for and responding to hazardous material incidents. SARA Title III includes provisions for reporting comprehensive hazardous material inventories to regulatory agencies, planning for and responding to chemical spills, and estimating toxic chemical releases to the environment.	CERCLA section 103E, 103F
SARA Title I, Section 126	This law includes minimum training requirements for personnel handling hazardous substances and responding to environmental emergency releases. This program is implemented at LLNL beginning with initial personnel training.	CERCLA section 103E, 103F
Assembly Bill 2185 (Waters Bill)	This law requires local administering agencies to regulate the storage of hazardous materials by businesses through preparation and submittal of hazardous materials "Business Plans." The Waters Bill also requires local administering agencies to prepare area plans for environmental emergency planning purposes and to identify and maintain resources for disasters and accidental releases.	40 CFR 355
Risk Management and Prevention Program (RMPP) California Health and Safety Code, Chapter 6.95, § 25531 et seq.	Requires certain facilities with threshold amounts of acutely hazardous materials (the California equivalent of federal extremely hazardous substances) to prepare an RMPP that addresses environmental emergency planning and response.	CA Health & Safety Code, Chapter 6.95, § 25531 et seq.
DOE Order 232.1 Occurrence Reporting and Processing of Operations Information	This order provides direction and procedures for DOE Order 5400.5 (below) establishing a system for reporting operations information related to DOE-operated facilities and processing of that information to provide for appropriate corrective action.	DOE O 232.1A (8/1/97)

Table 1. Environmental emergency planning regulatory summary and applicable Work Smart Standards. (cont'd)

Requirement	Description	WSS (see 3.1.6 for detail)
DOE Order 5400.5 Radiation Protection of the Public and the Environment	This order provides general and specific guidance and direction for adequate prevention of releases of radioactive substances. It was issued to protect the public and the environment from undue risk from radioactivity released from DOE facilities. The order requires that DOE facilities monitor routine and non-routine releases to assess dose exposure to the public.	DOE O 5400.5 Chg. 2
DOE Order 151.1 Emergency Management System	This order requires an emergency management system detailing emergency response activities for DOE installations.	DOE O 151.1 Chg. 2
DOE Order 5820.2A Radioactive Waste Management	This DOE order was established to provide policies and guidelines for DOE to manage radioactive and mixed wastes and contaminated facilities. It includes personnel and organization procedures for proper handling and management of radioactive wastes.	DOE O 5820.2A (except Chapter I) CA Health & Safety Code §§ 25500-25547.2

for potential chemical releases, and respond to chemical spills. More information regarding the ChemTrack system, including chemical inventory reports and material safety data sheets (MSDSs), can be obtained by accessing the LLNL internal web site,

<http://ctmsds.llnl.gov:1650/livehtml/Frame.html>

A password is required to access the ChemTrack database for detailed hazardous material inventories; it may be requested by contacting the ChemTrack Hotline.

LLNL meets the inventory requirements of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III, prepares and updates the Business Plans for both the Livermore Site and Site 300, and submits them to the Alameda and San Joaquin county agencies responsible for emergency response activities. These reports are used in planning for onsite releases. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) program is managed in accordance with regulations applicable to site remediation.

As the lead LLNL environmental support organization, the Environmental Protection Department (EPD) works with the Hazards Control Department's Emergency Management Division and other LLNL and DOE organizations. EPD ensures proper planning, resource allocation, and inventory reporting under the existing regulations.

2.3 Process for Compliance

One of the more important aspects of the environmental emergency planning process is the identification of specific facilities with any potential risks for unplanned releases and their consequent impacts to the public health or environment. This process typically includes the following:

- Implementing SARA III.
- Following DOE Order 151.1.
- Developing a comprehensive inventory of hazardous materials at a given facility or local area.
- Establishing an environmental emergency response protocol, notification procedures, specific responsibilities, and training guidelines for all appropriate agencies and personnel.
- Inventorying the types and condition of process or storage equipment, tanks, containers, or transportation equipment.
- Ensuring ongoing evaluation and training of workers in proper hazardous material management and handling operations.
- Assessing hazards associated with processes or operations pursuant to DOE Order 151.1.
- Identifying adequate equipment, personnel, and other resources available for timely, appropriate environmental emergency response and protection of public health.
- Creating reasonable accident scenarios used in training exercises.

2.4 Information and Reporting Requirements

EPD is responsible for providing the proper agency determinations and notifications following releases exceeding the reportable quantities identified by federal, state, and local ordinances and the standards set forth in applicable DOE orders. The LLNL Facility Manager (LLNL Director) is responsible for reporting and delegating to EPD environmental and other reporting requirements.

EPD and the LLNL Fire Department must coordinate inventory and planning efforts to prepare and submit appropriate reports and documentation for environmental emergency planning. The ChemTrack Operations Group in the Operations and Regulatory Affairs Division (ORAD) of EPD prepares and submits the Business Plans and applicable reports in compliance with SARA Title III and other state and local requirements.

2.5 Training

Hazards Control's Emergency Management Division is responsible for emergency planning, preparedness, and response. The division works with other LLNL departments, including EPD, to ensure that training for environmental emergency management organizations is conducted according to DOE, federal, and state requirements.

2.6 Work Standards

2.6.1 Work Smart Standards

Listed below are Work Smart Standards associated with environmental emergency planning.

CA Health and Safety Code §§ 25270-25270.13, Above Ground Storage of Petroleum

CA Health & Safety Code §§ 25500-25547.2, Hazardous Materials Release Response Plans and Inventory

CA Water Code §§ 13200-13272, Regional Water Quality Control

22 CCR §§ 66261.1-66261.126 and appendices, Identification & Listing of Hazardous Waste

23 CCR §§ 2610-2728, Underground Tank Regulations

40 CFR 112, Oil Pollution Prevention

40 CFR 141.11 - 141.16, Maximum Contaminate Levels [Federal Safe Drinking Water Act]

40 CFR 264.196, Response to leaks or spills and disposition of leaking or unfit-for-use tank systems

40 CFR 265, Interim Status Standards for Owners & Operators of Hazardous Waste Treatment, Storage & Disposal Facilities

40 CFR 265.196, Response to leaks or spills and disposition of leaking or unfit-for-use tank systems

40 CFR 355, Emergency Planning and Notification

40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

DOE O 151.1 Chg 2, Comprehensive Emergency Management System, § 3 and Attachment 1

DOE O 232.1A (8/1/97), Occurrence Reporting & Processing of Operations Information, Attachment 1 Contractor Requirements Document

DOE O 5400.1, Chapter III, Paragraphs 4(b) and 4(c), Pollution Prevention and Waste Minimization

DOE O 5400.5 Chg 2, Radiation Protection of the Public and the Environment, Chapter II, Paragraph 1.d., Public dose limits for drinking water pathway

DOE O 5820.2A, Radioactive Waste Management (except Chapter I: High Level Waste)

42 USC § 7401 et seq., Clean Air Act (CAA)

42 USC § 9601 et seq., Comprehensive Environmental Response, Compensation, and Liability Act of 1990 (CERCLA/Superfund)

2.6.2 Other Required Standards

CA Health & Safety Code, Chapter 6.95, § 25531 et seq.

2.7 Resources for More Information

2.7.1 LLNL Contacts

Personnel and organizations are available at LLNL to help with environmental emergency planning. Personnel from the Hazards Control Emergency Management Division write and maintain the sitewide Emergency Plan and Emergency Plan Implementing Procedures. This division also coordinates Environmental Emergency response preparedness, training, drills, and exercises. The ES&H Teams can identify the proper team members for assistance with specific Environmental Emergency planning issues. EPD has an Environmental Emergency management coordinator to ensure EPD's readiness to respond to all environmental incidents.

3.0 Environmental Emergency Response

Appropriate and timely response during unplanned releases of radioactive and nonradioactive hazardous substances at LLNL are necessary to minimize potential impacts to public health and the environment. Ensuring effective responses to such releases is a key objective of environmental compliance regulatory programs implemented by federal and state government agencies.

3.1 Regulatory Summary

Incident and environmental emergency response activities are mandated on all levels of government and by DOE. LLNL has developed and implemented an Emergency Preparedness Plan that designates specific responsibilities for response and notification in the event of an emergency. See Table 2 for a summary of specific regulations.

Table 2. Environmental emergency response regulatory summary and applicable Work Smart Standards.

Requirement	Description	WSS (see 3.2.5 for detail)
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	Requires notification to the federal National Response Center (NRC) if hazardous substance releases to the environment in a 24-hour period exceed reportable quantities established in the regulations.	40 CFR 112 40 CFR 300 et seq.
Superfund Amendments and Reauthorization Act (SARA), Title III	Requires notification to state and regional administering agencies whenever both extremely hazardous substances (EHS) and hazardous substances are released offsite that exceed reportable quantities.	40 CFR 355
National Pollutant Discharge Elimination System (NPDES)	Identifies the conditions that must be reported to the EPA in accordance with the CWA.	40 CFR 141.11 – 141.16
Resource Conservation and Recovery Act (RCRA)	Requires, at minimum, that treatment, storage, or disposal facilities (TSDFs) provide a training program to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, equipment, and systems.	40 CFR 260 40 CFR 264.196 40 CFR 265 40 CFR 265.196
Clean Air Act (CAA)	Requires reporting to the U.S. Environmental Protection Agency (EPA) in the event of excess pollutant emissions, changes in operations that increase permitted emissions, and excess toxic compound emissions.	40 CFR 761.30

3.2 Applicability to LLNL Activities

Activities at LLNL may pose a threat to human health or the environment because of the quantities of hazardous materials used and hazardous wastes generated during research and other operations. Environmental emergency response actions must be instituted in accordance with regulatory requirements and DOE and LLNL policies.

An incident involving a spill or release of a hazardous material may be small or large. Table 3 defines a small incident. Table 4 defines a large incident.

In the event of an incident or environmental emergency involving a spill or release of hazardous material, the following procedures shall be followed relative to the level of the incident or environmental emergency.

Table 3. Small incident.

A small incident is one that meets <u>all</u> of the following conditions:	
<ul style="list-style-type: none"> • The release of a material whose nature and potential hazards are known. • The release presents no actual or potential threat to human health or the environment. 	<ul style="list-style-type: none"> • The incident results in nothing more serious than a minor injury requiring simple first aid.

Table 4. Large incident.

A large incident is one that meets <u>any</u> of the following conditions:	
<ul style="list-style-type: none"> • Release of material with hazards unfamiliar to personnel. • Release of material that cannot be identified. 	<ul style="list-style-type: none"> • Release material migrates into a storm drain or sewer. • An incident that is regarded by personnel as unsafe to manage without the aid of the LLNL Fire Department. • Fire, explosion, or earthquake.
In an environmental emergency that includes multiple fires, explosions, and/or a natural disaster, the LLNL Fire Department/Incident Commander (IC) is responsible for primary response and initiation of the Incident Command System (ICS).	

In the event of a small incident, during normal working hours, notify the ES&H Team environmental analyst for the area as soon as possible to report a small spill. Off hours, contact the Environmental Duty Officer (EDO) through the Fire Department dispatcher. Dial 911 on LLNL phones and (925) 447-6880 on cell phones. The ES&H Team environmental analyst or EDO will follow the regulatory requirements for reporting when necessary.

For a large incident, call the LLNL Fire Department (911 onsite). The Incident Command System (ICS) will be established relative to the needs for response resources (e.g., the ES&H Team, EPD, Plant Engineering). The Satellite Operations Center(s) (SOC[s]) may need to be activated, as well as the Emergency Management Center (EMC). The ES&H Team environmental analyst will follow the regulatory requirements for reporting.

3.3 Process for Compliance

Trained personnel respond to incidents to ensure that the impacts to public health and the environment are minimal and notification requirements are met. EOG EAs and EDOs are certified to meet notification requirements. Anyone who generates hazardous waste is required to be familiar with environmental emergency procedures, equipment, and systems. Generator requirements are explained in detail in the Hazardous Waste Generation and Certification course (EP0006/6R) required for all generators of hazardous waste.

However, because environmental emergency response equipment and systems are facility-specific, any generator is required to:

- Be familiar with his/her own roles and responsibilities with respect to the environmental emergency response systems in his/her generator area.
- Know how to report potential problems with the routine operations of these facility-specific systems.
- Know how to contact his/her ES&H Team.

Generators and trained program and facility personnel can handle small incidents with some support from the ES&H Team if needed. The incident should be reported to the EOG Analyst during working hours, or to the EDO during off-hours.

If a spill or environmental emergency occurs meeting the large incident criteria (see Table 4), you should evacuate the area of the spill and immediately contact the LLNL Fire Department at 911 from an LLNL phone or (925) 447-6880 from a cell phone and provide the following information:

- Location, quantity, and substance released (if known).
- Extent to which spill has traveled.
- Number and extent of injuries.
- Your name, organization, and telephone number.
- Other hazards and information requested by the dispatcher.

3.4 Training

EPD provides the necessary training requirements in accordance with environmental regulations and environmentally related DOE orders. This includes training to address and upgrade skills for environmental protection and for handling hazardous substances. These courses address health, safety, and environmental emergency response issues that are specific to the operations of each organization. Generators of hazardous waste are required to attend EP0006/6R. Waste Accumulation Area operators are required to attend EP0053. In addition, the Hazards Control Department provides training that addresses health and safety issues. In some cases this training is required before certain jobs or tasks can be performed.

3.5 Work Standards

3.5.1 Work Smart Standards

Listed below are Work Smart Standards associated with environmental emergency response.

CA Health and Safety Code §§ 25270-25270.13, Above Ground Storage of Petroleum

CA Health & Safety Code §§ 25500-25547.2, Hazardous Materials Release Response Plans and Inventory

CA Water Code §§ 13200-13272, Regional Water Quality Control

22 CCR §§ 66261.1-66261.126 and appendices, Identification & Listing of Hazardous Waste

23 CCR §§ 2610-2728, Underground Tank Regulations

29 CFR 1910 Subpart J, General Environmental Controls

40 CFR 110, Discharge of Oil

40 CFR 112, Oil Pollution Prevention

40 CFR 141.11 - 141.16, Maximum Contaminate Levels [Federal Safe Drinking Act]

40 CFR 260, Hazardous Waste Management System: General

40 CFR 265, Interim Status Standards for Owners & Operators of Hazardous Waste Treatment, Storage & Disposal Facilities

40 CFR 265.196, Response to leaks or spills and disposition of leaking or unfit-for-use tank systems

40 CFR 300 et seq., National Oil and Hazardous Substances Pollution Contingency Plan

40 CFR 355, Emergency Planning and Notification

40 CFR 761.30, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

40 CFR 264.196, Response to leaks or spills and disposition of leaking or unfit-for-use tank systems

42 USC § 7401 et seq., Clean Air Act (CAA)

DOE O 151.1 Chg 2, Comprehensive Emergency Management System, § 3 and Attachment 1

DOE O 232.1A (8/1/97), Occurrence Reporting & Processing of Operations Information, Attachment 1 Contractor Requirements Document

DOE O 5400.1, Chapter III, Paragraphs 4(b) and 4(c), Pollution Prevention and Waste Minimization

3.5.2 Other References

Executive Order 12316, "Response to Environmental Damage"

3.6 Resources for More Information

3.6.1 LLNL Contacts

If you have questions or concerns regarding hazardous substance releases to the environment, contact the following environmental emergency response personnel (the phone numbers can be obtained on the ES&H contact page):

Environmental Emergency Management Coordinator—EPD's Environmental Emergency Management Coordinator is responsible for ensuring EPD's readiness to respond to all environmental-related incidents and can be contacted through the EDO if necessary.

Environmental Duty Officer (EDO)—EDOs are personnel from within EPD. These personnel are responsible for all off-hour coordination of environmental emergency response and reporting activities. They provide input and support for compliance with environmental regulations. The EDO may be contacted through the LLNL Fire Department Dispatcher.

Environmental Operations Group (EOG) Analyst—The EOG environmental analysts are members of EPD's Operations and Regulatory Affairs Division (ORAD) and members of the ES&H Teams. These personnel are responsible for coordination of environmental emergency response and reporting activities.

The ES&H Team Leader can identify the proper team member for assistance with environmental emergency response activities.

Hazardous Waste Management (HWM) Division—HWM personnel can assist in material and/or waste analyses if information about the released substances is not available.

Hazards Control Department—The Hazards Control Department coordinates some of the environmental emergency planning, response, and reporting activities at LLNL.

LLNL Fire Department—The LLNL Fire Department should be contacted in case of environmental emergency incidents and can provide information about the proper storage and handling of hazardous substances.